Arch Chemicals, Inc.

MATERIAL SAFETY DATA

FOR ANY EMERGENCY, CALL 24 HOURS/7 DAYS:	**1-800-654-6911**
FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC®:	1-800-424-9300
MSDS QUESTIONS & REQUESTS, CALL MSDS CONSULTATION LINE:	1-800-511-MSDS

PRODUCT NAME: HTH® PACE® DUAL ACTION 1" CHLORINATING TABLETS

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

REVISION DATE: 02-18-2004 SUPERCEDES: 12-11-2003
MSDS NO: 05124-0001 - 41214

Manufacturer: Arch Chemicals, Inc. 501 Merritt 7 PO Box 5204 Norwalk, CT 06856-5204

SYNONYMS: None
CHEMICAL FAMILY: Chloroisocyanurates
FORMULA: Not Applicable/Mixture
DESCRIPTION: Sanitizer, oxidizer, algaecide
OSHA HAZARD CLASSIFICATION: Oxidizer, corrosive, skin and eye hazard, lung toxin, toxic by ingestion and inhalation.

SECTION 2 COMPONENT DATA

PRODUCT COMPOSITION
CAS or CHEMICAL NAME: Trichloro-s-triazinetrione
CAS NUMBER: 87-90-1
PERCENTAGE RANGE: 90-96%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: 0.5 mg/cubic-meter, 8 hr. TWA - Manufacturer's recommended interim internal exposure standard

CAS or CHEMICAL NAME: Dichloroisocyanuric acid
CAS NUMBER: 2782-57-2
PERCENTAGE RANGE: 0-4%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Copper sulfate pentahydrate
CAS NUMBER: 7758-98-7 (anhydrous)
PERCENTAGE RANGE: 1.4-1.55%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Aluminum sulfate, anhydrous
CAS NUMBER: 10043-01-3
PERCENTAGE RANGE: 4.5-4.9%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: Aluminum, soluble salts as Al

OSHA (PEL)		ACGIH (TLV)	
ppm	mg/cubic-meter	ppm	mg/cubic-meter

TWA:	None	2
CEILING:	None	None
STEL:	None	None

SECTION 3 PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN, EYES AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER. AVOID INHALATION OF DUST.
STORAGE CONDITIONS: Store in a clean dry well ventilated area. Keep away from incompatible chemicals (see below).
DO NOT STORE AT TEMPERATURES ABOVE: 60 Deg.C (140 Deg.F)
PRODUCT STABILITY AND COMPATIBILITY
SHELF LIFE LIMITATIONS: Indefinite. Available chlorine loss can be as little as 0.1% per year at ambient temperatures.
INCOMPATIBLE MATERIALS FOR PACKAGING: Paper, cardboard
INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Organic materials, reducing agents, nitrogen containing materials, other oxidizers, acids, bases

SECTION 4 PHYSICAL DATA

APPEARANCE: White solid
FREEZING POINT: Not Applicable
BOILING POINT: Not Applicable
DECOMPOSITION TEMPERATURE: 225 Deg.C (437 Deg.F)
SPECIFIC GRAVITY: No Data
BULK DENSITY: 2.1 g/cc
pH OF 1% SOLUTION: 2.4-2.7
VAPOR PRESSURE @ 25 DEG.C: Not Available
SOLUBILITY IN WATER: 1.2% @ 25 Deg.C
VOLATILES, PERCENT BY VOLUME: Not Applicable
EVAPORATION RATE: Not Applicable
VAPOR DENSITY: Not Applicable
MOLECULAR WEIGHT: Not Applicable Mixture
ODOR: Sharp, chlorine-like
COEFFICIENT OF OIL/WATER DISTRIBUTION: No Data

SECTION 5 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:
RESPIRATORY PROTECTION: Wear a NIOSH approved respirator with chlorine cartridges and a dust/mist prefilter if dusts are created.
VENTILATION: Use local exhaust ventilation to minimize dust and chlorine levels where industrial use occurs. Otherwise, ensure good general ventilation.
SKIN AND EYE PROTECTIVE EQUIPMENT: Wear gloves, and chemical safety glasses to avoid skin and eye contact. Where industrial use occurs, chemical goggles or full impermeable suit may be required.
EQUIPMENT SPECIFICATIONS (WHEN APPLICABLE):
RESPIRATOR TYPE: NIOSH approved full face-piece respirator with chlorine cartridges and dust/mist pre-filters.
PROTECTIVE CLOTHING TYPE (This includes: gloves, boots, apron, protective suit): Neoprene

SECTION 6 FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:

FLAMMABLE:	No
COMBUSTIBLE:	No

PYROPHORIC: No
FLASH POINT: Not Applicable
AUTOIGNITION TEMPERATURE: Not Applicable
FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): LEL - Not Applicable UEL - Not Applicable

NFPA RATINGS:
NFPA Oxidizer Class: Meets the criteria of an NFPA Class 1 Oxidizer

HMIS RATINGS:
Health: 3
Flammability: 0
Reactivity: 2

EXTINGUISHING MEDIA: Not Applicable
FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. On small fires, use water spray or fog. On large fires, use heavy deluge or fog streams. Flooding amounts of water may be required before extinguishment can be accomplished. Do not use dry chemical extinguishers containing ammonia compounds.

SECTION 7 REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:
TEMPERATURES ABOVE: 225 Deg.C (437 Deg.F)
MECHANICAL SHOCK OR IMPACT: No
ELECTRICAL (STATIC) DISCHARGE: No
OTHER: Contact with small amounts of water may result in an exothermic reaction with the liberation of toxic fumes.
HAZARDOUS POLYMERIZATION: Will Not Occur
INCOMPATIBLE MATERIALS: Organic materials, oils, grease, sawdust, reducing agents, nitrogen containing compounds, other oxidizers, acids, bases, dry fire extinguishers containing ammonium compounds
HAZARDOUS DECOMPOSITION PRODUCTS: Nitrogen trichloride, chlorine, nitrous oxides, cyanates, carbon monoxide, carbon dioxide
OTHER CONDITIONS TO AVOID: Damp or slightly wet product (will evolve nitrogen trichloride)

SUMMARY OF REACTIVITY:
OXIDIZER: Considered to be an OSHA oxidizer per 29CFR 1910.1200.
Not an Oxidizer according to the criteria established by the 49 CFR DOT regulations
Meets the criteria of a Class 1 Oxidizer as established by the National Fire Protection Association (NFPA)
ORGANIC PEROXIDE: No
PYROPHORIC: No
WATER REACTIVE: No

SECTION 8 FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. DO NOT induce

vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

SECTION 9 TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION
Inhalation, skin and eye contact, ingestion

WARNING STATEMENTS AND WARNING PROPERTIES
TOXIC IF SWALLOWED. MODERATELY TOXIC IF INHALED. CAUSES SKIN, EYE, DIGESTIVE TRACT AND RESPIRATORY TRACT BURNS.

HUMAN THRESHOLD RESPONSE DATA
ODOR THRESHOLD: No Data
IRRITATION THRESHOLD: No Data
IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: No IDLH concentrations has been established for this product. Trichloroisocyanuric acid has the potential to be immediately dangerous to life and health.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE
INHALATION
ACUTE:
Inhalation of this material is irritating to the nose, mouth, throat and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage.
CHRONIC:
Chronic (repeated) inhalation exposure may cause impairment of lung function and permanent lung damage.

SKIN
ACUTE:
Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause permanent damage.
CHRONIC:
Repeated skin exposure may cause tissue destruction due to the corrosive nature of the product.

EYE
Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

INGESTION
ACUTE:
Irritation and/or burns can occur to the gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding and/or tissue ulceration. Ingestion causes severe damage to the gastrointestinal

tract with the potential to cause perforation.

CHRONIC:

There are no known or reported effects from chronic exposure. Chronic ingestion of significant amounts of this product is unlikely because of its acute corrosive action.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Asthma, respiratory and cardiovascular disease

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY

None known or reported

ANIMAL TOXICOLOGY

ACUTE TOXICITY

INHALATION LC 50: Approximately 0.56 mg/l (4 hr., rat - nose only), based on similar compound

ORAL LD 50: Believed to be approximately 490 mg/kg (rat), based on similar compound

DERMAL LD 50:Believed to be > 2 g/kg (rabbit), based on similar compound

IRRITATION: Causes burns to eyes and skin.

ACUTE TARGET ORGAN TOXICITY:

This product is corrosive to all tissues contacted and upon inhalation, may cause irritation to mucous membranes and respiratory tract.

CHRONIC TARGET ORGAN TOXICITY

There are no known or reported effects from repeated exposure. Toxicological investigation indicates that Trichloroisocyanuric acid does not produce significant effects from chronic exposure.

REPRODUCTIVE AND DEVELOPMENTAL TOXICITY

There are no known or reported effects on reproductive function or fetal development. Toxicological investigation indicates that Trichloroisocyanuric acid does not effect reproductive function or fetal development.

CARCINOGENICITY

This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

MUTAGENICITY

This product is not known or reported to mutagenic. Trichloroisocyanuric acid has been tested in microbial mutagenicity assays. The microbial mutagenicity assays employed five Salmonella strains and one E. coli strain with and without mammalian microsomal activation. No mutagenic effects were observed in these assays.

AQUATIC TOXICITY

No data is available for this product. Individual constituents are as Follows:

Trichloroisocyanuric acid:

LC 50: Rainbow trout (96 hrs. exposure) - 0.32 ppm
Bluegill sunfish (96 hrs. exposure) - 0.30 ppm
Daphnia magna (48 hrs. exposure) - 0.21 mg/l
Mallard duck (8-day dietary exposure) - > 10,000 ppm
Mallard duck (Oral LD 50) - 1.6 g/kg
Bobwhite quail (8-day dietary exposure) - 7422 ppm

SECTION 10 TRANSPORTATION INFORMATION

This product is not regulated as a hazardous material under 49 CFR 172.101.

U.S. DOT Ground: Not Regulated in Transport
Hazardous Substance as defined in 49 CFR 142.101, Appendix A: No

ICAO/IATA Air: Not Regulated in Transport

IMDG Ocean: Not Regulated in Transport
Listed Marine Pollutant: No

SECTION 11 SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.
REPORTABLE QUANTITY: Not Applicable (Per 40 CFR 302.4)
SPILL MITIGATION PROCEDURES:
Hazardous concentrations in air may be found in local spill area and immediately downwind. If spill material is still dry, do not put water directly on this product as a gas evolution may occur. If material is wet, contact the net work for proper stabilization procedures.

AIR RELEASE: Vapors may be suppressed by the use of a water fog.

WATER RELEASE: This material is heavier than water. This material is soluble in water. Stop flow of material into water source as soon as possible. Begin monitoring for available chlorine and pH immediately.

LAND SPILL: Do not contaminate spill material with any organic materials, ammonia, ammonium salts or urea. Clean up all spill material with clean, dry dedicated equipment and place in a clean dry container.

SPILL RESIDUES:
Dispose of per guidelines under Section 12, WASTE DISPOSAL.
This material may be neutralized for disposal; you are requested to contact ARC Chemicals at 800-654-6911 before beginning any such operation.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:
Response to this material requires the use of a full encapsulated suit and a NIOSH approved positive pressure supplied air respirator. Compatible materials for response to this material are neoprene. Protection concerns must also address the following: If this material becomes damp/wet or contaminated in a container the formation of nitrogen trichloride gas may occur and an explosive condition may exist.

SECTION 12 WASTE DISPOSAL

If this product becomes a waste, it DOES NOT meets the criteria of a hazardous
waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a nonhazardous waste, it should be disposed of in accordance with local, state and federal regulations.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING

TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

SECTION 13 ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT:
The components of this product are listed on the Toxic Substances Control Act Inventory.

SUPERFUND AMENDMENT AND REAUTHORIZATION ACT TITLE 3:
HAZARD CATEGORIES, PER 40 CFR 370.2:
HEALTH:
Immediate (Acute)
PHYSICAL:
Fire and Reactivity

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:
EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:
None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:
This mixture or tradename product contains a toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.
CHEMICALS LISTED ARE: Copper sulfate (copper compounds)

SECTION 14 ADDITIONAL INFORMATION

MSDS REVISION STATUS: Sections 6, 12

SECTION 15 MAJOR REFERENCES

1. Hammond, B., et al., A Review of Toxicology Studies on Cyanurate and its Chlorinated Derivatives, Environmental Health Perspectives, Vol. 69, pp. 287-292, 1986.
2. 28-Day Dosing Study in Rats (Extended to a 59-Day Dosing Study), s-Triazinetriol, Monosodium Slat; Sodium Dichloro-s-triaizinetrione dihydrate and Trichloro-s-triazinetrione, International Research and Development Corporation, Mattawan, MI, Study No. 167-150, September 12, 1980.
3. Eight-Day Dietary LC 50 - Bobwhite Quail, ACL 85, Final Report, Truslow Farms Inc., Wildlife Research Division, Sterling, VA, Project No. 139-112, July 15, 1975.
4. Eight-Day Dietary LC 50 - Mallard Duck, ACL 85, Final Report, Truslow Farms Inc., Wildlife Research Division, Sterling, VA, Project No. 139-113, July 15, 1975.
5. Acute Oral LD 50 - Mallard Duck, ACL-85, Final Report, Truslow Farms Inc., Wildlife International Ltd., Chestertown, MD, Project No. 139-120, October 18, 1976.
6. Acute Toxicity of ACL-85 to Daphnia magna, Bioassay Report, E G & G, Bionomics, Aquatic Toxicology Laboratory, Wareham, MA, November, 1976.
7. Four-Day Static Aquatic Toxicity Studies with ACL-85, LOT No. 5/8/75 GDN in Rainbow Trout and Bluegills, Industrial BIO-TEST Laboratories, Inc., Northbrook, IL, BTL No. 75-39, IBT No. 621-07227, September 5, 1975.
8. Acute Toxicity Studies with Trichloroisocyanuric acid, Industrial BIO-TEST Laboratories, Inc., Northbrook, IL, P.O. No. RC-34355, IBT No. 8530-08303, April 20, 1976.
9. Shimizu, H. et al., The Results of Microbial Mutation Test for Forty Three Inustrial Chemicals, Japan. J. Ind. Health, Vol. 27, 400-419, 1985.

10. Acute Toxicity Studies with Trichloroisocyanuric Acid (Olin CDB 70): Oral LD50 in Rats, Dermal LD50 in Rabbits, Dermal Irritation in Rabbits, Primary Eye Irritation/Corrosion in Rabbits, Dermal Sensitization in Guinea Pigs. MB Research Laboratories, Inc., Spinnerstown, PA., July 1994.
11. Nose-Only Acute Inhalation Toxicity Evaluation on Trichloroisocyanurate (Olin CDB 70) in Rats. IRDC Laboratories, Mattawan, MI, July 1994.

Other references are available upon request.

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